SSVEO IFA List **Date:02/27/2003**

STS - 51C, OV - 103, Discovery (3) **Time:04:27:PM**

Tracking No	Time	Classification	Documentation		Subsystem
MER - 0	**MET:** Prelaunch	Problem	**FIAR**	**IFA** STS-51C-V-01	HYD
	GMT: Prelaunch		**SPR** 20F001	**UA**	**Manager:**
			IPR	**PR**	
					Engineer:

Title: Right Inboard Elevon Actuator Channel 4 Experienced A Secondary Differential Pressure Force Fight. (ORB)

Summary: DISCUSSION: During prelaunch operations at about T-3 hours, the secondary pressures indicated that the RIE (right inboard elevon) secondary actuator channel 4 was in a force fight with channels 1, 2, and 3. All attempts to clear the force fight were unsuccessful. At the time, hydraulic system pressure was being supplied by the hydraulic circulation pumps. Later, when the APU's (auxiliary power units) were turned on, the hydraulic pressure went to full value (3000 psi) and the force fight cleared after 22 seconds. There was no problem with the RIE actuator during subsequent mission operations.

A similar condition was experienced with the RIE secondary actuator channel 4 on mission STS-41D, which was analyzed as a transient contamination condition (STS-41D-28). The STS-51C differential pressure data and the time required for the actuator to clear was essentially an overlay of that seen on STS-41D. Since this is a repeat condition, the RIE actuator has been removed, replaced and returned to the vendor for failure analysis. CONCLUSION: The RIE actuator has experienced a force fight, the cause of which is unknown. CORRECTIVE_ACTION: The RIE actuator has been removed, replaced and returned to the vendor for failure analysis. The results of this activity will be tracked via CAR 20F001. CAR ANALYSIS: Vendor testing could not verify the reported failure. However, large amounts of low level contaminants were found in a sample drawn from the return port of the Servovalve. The reported failure is attributed to "silting" (where servovalve movement is all that is required to clear the problem). MCR 11236 has been approved which authorizes OMRSD changes to provide slew test increased rates and limits to elevon actuators to reduce the risk of silting at liftoff. [not included in original problem report] EFFECTS_ON_SUBSEQUENT_MISSIONS: NONE, pending the resolution of CAR 20F001.

Tracking No	Time	Classification	Documentation		Subsystem
MER - 0	**MET:** Prelaunch	Problem	**FIAR**	**IFA** STS-51C-V-02	GND
	GMT: Prelaunch		**SPR**	**UA**	**Manager:**
			IPR	**PR**	

Engineer:

Title: Helium Leak In Midbody From Unknown Source. (ORB)

Summary: DISCUSSION: The hazardous gas detection system indicated a high helium concentration in the Orbiter midfuselage during prelaunch operations. The system provides a hazardous gas monitoring capability by pulling a vacuum (7 psia) on a detection line routed from the midfuselage through the liquid hydrogen T-0 umbilical to a leak detector on the ground.

To assure the integrity of the main propulsion helium system located in the Orbiter midfuselage, a pressure decay test was performed. The decay test verified that no significant main propulsion helium system leakage existed. The main propulsion system continued to be monitored for leakage with no noted problems after the system was pressurized to the flight levels. In addition, the main propulsion helium system pressure profile throughout the mission was reviewed and found to be nominal. The Orbiter midfuselage hazardous gas quick disconnect at the liquid hydrogen T-0 umbilical most probably leaked at the seal between the flight and ground half. This allowed helium purge gas at the T-0 umbilical to be pulled into the hazardous gas detection line, which, in turn caused the leak detector to provide a high helium concentration reading. Launch Operations is currently investigating the midbody hazardous gas ground-half disconnect in the liquid hydrogen T-0 umbilical. The anomaly is being tracked by an open discrepancy report at the launch site. CONCLUSION: The Orbiter midbody hazardous gas system disconnect located in the liquid hydrogen T-0 umbilical most probably leaked at the interface seal between the flight and ground half, and this in turn allowed helium to be ingested and exposed to the ground leak detector. CORRECTIVE_ACTION: Launch Operations is currently investigating and tracking the anomaly by an open discrepancy report. EFFECTS_ON_SUBSEQUENT_MISSIONS: NONE

Tracking No	Time	Classification	Documentation		Subsystem
MER - 0	**MET:**	Problem	**FIAR**	**IFA** STS-51C-V-03	INS
	GMT:		**SPR** 20F004, 20F003	**UA**	**Manager:**
			IPR	**PR**	
					Engineer:

Title: STS-51C Instrumentation Failures. (ORB)

Summary: DISCUSSION: A. APU 1 exhaust gas temperature 2 (V41T0140A) failed off-scale high shortly after APU start-up. The sensor has been replaced and operation will be verified prior to the next OV-103 flight. This is the first time this measurement has failed off-scale high. The failure analysis will be tracked on CAR 20F004.

CAR ANALYSIS: (Failure transferred from CAR 14F011 to AC7837-010). RI-Downey L&T analysis revealed that the sensor lead wires were twisted and shorted near the transducer exit area. Insulation in the area was also badly frayed. Cause of twisting and insulation damage was attributed to mishandling of the sensor before, during and after installation into the APU exhaust duct. A sensor redesign was submitted by EDCP but was rejected at PMR between Rockwell and NASA. [not included in original problem report] B. The SSME 2 GH2 outlet temperature (V41T1261A) read off-scale high shortly after lift-off. Although this measurement has failed previously on other engines, it has operated properly on the two previous OV-103 flights. The sensor is known to be sensitive to launch vibrations. The sensor will be replaced for the next flight of OV-103 and the failure analysis will be tracked on CAR 20F003. CAR ANALYSIS: Original sensor is underdesigned for application in existing environment. Failure is almost anticipated. Replacement with ruggedized sensor is being made on an attrition basis. [not included in original problem report] C. The main bus "B" forward power controller current (V76C3076A) read erratically high for approximately 3 minutes during flight day 1. Review of other related measurements (i.e. bus voltage and fuel cell voltage and current) showed no change. Other measurements in the vicinity of the current sensor also showed no unusual behavior during the 3-minute interval and a review of the effect of the operation of other vehicle systems during this interval cannot explain the unusual current reading. The condition did not recur during the remainder of the flight or during turnaround operations at KSC. The cause of the problem is unknown. This measurement is not required for the launch commit criteria. D. The ET (external tank) 100-percent liquid-level point sensor(T41X1718E) was erratic during the launch interval. The point sensor worked properly during loading. Troubleshooting of the Orbiter signal conditioning circuitry for the measurement has verified that these electronics are functioning properly. The problem was most probably caused by a faulty sensor. CONCLUSION: See above. CORRECTIVE_ACTION: See above. EFFECTS_ON_SUBSEQUENT_MISSIONS: See above.

Tracking No	Time	Classification	Documentation		Subsystem
MER - 0	**MET:**	Problem	**FIAR**	**IFA** STS-51C-V-04	OMS
	GMT:		**SPR** 14F005, 19F013	**UA**	**Manager:**
			IPR	**PR**	
					Engineer:

Title: STS 51A Carryover Items. (ORB)

Summary: DISCUSSION: The following failures occurred on STS 41-D, 51-A, and 51-C. Corrective actions were deferred for STS 51-A and 51-C except as noted.

A. Left OMS fuel total quantity (V43Q4331C) failed after the OMS-1 burn (see STS 51A-15 and STS 41D-8). The suspected forward probe electronics were replaced prior to STS 51 C. CAR ANALYSIS: This and many other switch problems is attributed to conductive and nonconductive particles floating within the switch containers in zero G. Problem switches are being replaced as replacement switches (without contaminants) become available. [not included in original problem report] B. Right OMS fuel total quantity failed during prelaunch operations (see STS 51A-15 and STS 41D-8). CAR ANALYSIS: Cause of this failure was isolated to broken wiring at pin 1 of J202 on the forward fuel probe electronics module. Break appeared to be due to excessive flexing and improper handling. Corrective action has been taken to caution maintenance and inspection personnel against future mishandling. [not included in original problem report] C. Right OMS oxidizer total quantity biased during prelaunch operations (see STS 51A-15). CONCLUSION: Item A - Replacement of the forward probe electronics for STS 51-C did not fix the problem. Items B and C - Totalizer

relacement as a result of the complete failure of the right OMS gaging system during entry (see STS 51C-12) will not correct these prelaunch problems. Loading at KSC with the functioning portions of the gaging system and ground instrumentation is acceptable for STS 51-D. Alternate means of deriving quantity information is available during Orbiter flight. CORRECTIVE_ACTION: Item A, B and C - None for STS 51-D. EFFECTS_ON_SUBSEQUENT_MISSIONS: NONE

Tracking No	Time	Classification		Documentation		Subsystem
MER - 0	MET:	Problem	FIAR	IFA STS-51C-V-05		DPS
	GMT:		SPR	UA		Manager:
			IPR	PR		
						Engineer:

Title: a. Backup Flight System Failure To Automatically Proceed To Major Mode 104.b. Backup Flight System Time Of Ignition 8 Seconds Late For Deorbit Maneuver. (ORB)

Summary: DISCUSSION: a. Following ET (external tank) separation, the BFS (backup flight system) did not automatically proceed to MM (major mode) 104, and the crew manually initiated the mode change. The criteria for the mode change is that the BFS must sense a 3.6 ft/sec velocity change after receiving the ET separation indication from the MEC (master events controller). Analysis shows that, with worst case timing and maximum acceleration in the early part of the separation maneuver, the BFS sensed approximately 3.5 ft/sec instead of the required velocity of 3.6 ft/sec. The separation velocity on this flight was lower than on previous flights. (The PASS (primary avionics software system) sensed a velocity just slightly above its threshold of 4.0 ft/sec as compared with 4.8 ft/sec on STS 51-A.)

b. The BFS TIG (time of ignition) for the deorbit maneuver was 8 seconds later than the PASS. The crew stated that the 0 seconds in the TIG was not entered because the display did not show any seconds. The previous burn data shows that it had an ignition time ending in 8 seconds. Upon entering the deorbit TIG, which occurred on an even minute, the crew did not enter zeroes for the seconds. Since the existing 8-second entry from the prior burn was not over written, the BFS still read the TIG seconds-to-remain at 8 seconds. CONCLUSION: a. The BFS did not sense the required velocity after ET separation for moding to MM 104. b. The complete TIG was not entered due to the crew's misinterpretation of the displayed blanks in the seconds field. CORRECTIVE_ACTION: a. A review of the criteria and system timing is being conducted that will result in a software CR to the BFS and PFS requirements associated with the MM 104 transition. b. An operations note specifying how the BFS handles the display of TIG is defined in SMS B08006, "Valve Associated With Blanked Target Data", dated February 1981. EFFECTS_ON_SUBSEQUENT_MISSIONS: None, any further action will be the subject of software CR's.

Tracking No	Time	Classification		Documentation		Subsystem
MER - 0	MET:	Problem	FIAR	IFA STS-51C-V-06		EPD
	GMT:		SPR	UA		Manager:
			IPR	PR		

Engineer:

Title: AC 1 Phases "A" And "B" Low Current On WCS Fan Separator 1. (ORB)

Summary: DISCUSSION: On flight day 2, the WCS (waste collection system) fan separator 1 phases "A" and "B" indicated low current as measured by the total current measurements for each phase on the AC 1 bus. A similar current signature has been observed on AC 1 phase "A" during WCS fan separator 1 operation on the previous flight. See problem STS-51A-16.

Inflight troubleshooting showed that the low motor currents were experienced when the WCS fan separator 1 operations were associated with use of the panel lights. The low current on phase "A" was duplicated by placing the left center panel lights on full bright. The same low current condition was experienced on phase "B" when the right panel lights were on full bright. When the panel lights were turned off, the motor currents were equal on all three phases. CONCLUSION: Low currents on AC 1 phases "A" and "B" were caused by the operation of the WCS fan separator 1 together with the panel lights. Operation of the panel lights changed the power factor and the phase current readings. CORRECTIVE_ACTION: None required. Current measurements were normal due to the change in power factor caused by operation of the panel light. EFFECTS_ON_SUBSEQUENT_MISSIONS: NONE

Tracking No	Time	Classification		Documentation		Subsystem
MER - 0	**MET:**	Problem	**FIAR**	**IFA** STS-51C-V-07		PRSD
	GMT:		**SPR**	**UA**		**Manager:**
			IPR	**PR**		

Engineer:

Title: Oxygen Tank 2 Heater Control Pressure Measurement (V45P1210A) Failed Momentarily. (ORB)

Summary: DISCUSSION: Post insertion, the reactant storage liquid oxygen (LO2) tank 2 pressure dropped off-scale low. The pressure drop triggered the onboard fault detection annunciation (FDA) as well as the caution/warning system both of which are set at a low value of 540 psia. The pressure remained off-scale low for 70 seconds, and then returned to a value corresponding to that being monitored prior to the data loss. The LO2 tank pressure remained stable with normal data values exhibited throughout the remainder of the mission.

Two independent adjacent pressure sensors are located in the liquid oxygen tank 2 vent line to monitor tank pressure. The sensor (TO20) is outputted to both the operational instrumentation (V45P1200A) measurement and the onboard LO2 tank 2 pressure and quantity display (S2 panel O2). Measurement V45P1200A is also monitored by the FDA to provide an indication of abnormal system operation. Measurement V45P1200A did not indicate a pressure loss. Sensor (TO28) is outputted through the control pressure conditioner to two separate measurements (V45P1215A and V45P1210A) and the caution/warning system. Both measurments indicated a 70-second LO2 tank 2 pressure loss. The signatures of both measurements were identical during the loss. Also, the caution/warning system and FDA that was monitoring

V45P1210A, both of which are set at 540 psia, were triggered. Review of the LO2 tank 2 control pressure circuitry has established the components common to both measurements (V45P1215A and V45P1210A) and the caution/warning system. Failure or abnormal operation of the pressure sensor (TO28), control pressure transducer, interface wiring, or control pressure conditioner power supply and amplifier could cause a data loss. Data evaluation has not revealed any other data glitch being experienced during the 70-second loss of LO2 tank 2 pressure. Launch Operations at KSC has performed troubleshooting on the LO2 tank 2 pressure control circuitry without duplicating the pressure loss. The LO2 tank 2 has instrumentation redundancy in that three measurements (two independent and monitored by FDA) are downlinked. CONCLUSION: The LO2 tank 2 pressure drop was due to an unexplained data glitch which has not been duplicated through troubleshooting by Launch Operations. Redundancy exists to provide tank pressure intelligence, should the problem recur during the next flight of OV-103. CORRECTIVE_ACTION: NONE EFFECTS_ON_SUBSEQUENT_MISSIONS: NONE

Tracking No	Time	Classification	Documentation		Subsystem
MER - 0	**MET:**	Problem	**FIAR**	**IFA** STS-51C-V-08	Star Tracker
	GMT:		**SPR** AC9409, AC9410	**UA**	**Manager:**
			IPR	**PR**	
					Engineer:

Title: -Y And -Z Star Tracker Target Suppression Shutter Closures With Anomalous Bright Object Sensor Operation. (ORB)

Summary: DISCUSSION: The -Y star tracker shutter was closed on flight day 1, 2 and 3 by the target suppression circuit because of excessive light within the 10-degree field-of-view where the BOS (bright object sensor) should have closed the shutter first. On flight day 3 a similar target suppression shutter closure occurred on the -Z star tracker. During the previous mission, the -Z star tracker shutter latched up due to target suppresssion while tracking the PALAPA and Westar rendezvous targets. Crew action was required to reopen the shutters in the target track mode. See problem STS-51A-21. The software was modified prior to STS-6 so that the shutters are reopened automatically after closure due to target suppression while in the star track mode. Crew action was not required to reopen the shutter during STS 51-C.

The target suppression occurrences were associated with momentary BOS signal at sun angles of about 30 degrees. Postflight troubleshooting after STS 51-C found some film contamination or discoloration on the light shades that may have altered the sun light attenuation for the star tracker lens. CONCLUSION: The anomalous bright object sensor operations on both the -Y and -Z star trackers were probably due to film contamination or discoloration on the light shades altering the sun light attenuation for the lens at about 30 degrees sun angle. CORRECTIVE_ACTION: Star tracker software has been modified for STS 51-E and subsequent missions to reopen the shutters automatically after closure due to target suppression in the target track mode. The light shades on both star trackers will be removed and replaced on a non-interference basis. EFFECTS_ON_SUBSEQUENT_MISSIONS: NONE

Tracking No	Time	Classification	Documentation		Subsystem
MER - 0	**MET:**	Problem	**FIAR**	**IFA** STS-51C-V-09	C&T

GMT:	**SPR** 20F002	**UA**	**Manager:**
	IPR	**PR**	
			Engineer:

Title: During Entry, TACAN 3 Was Searching, But Did Not Lockup. (ORB)

Summary: DISCUSSION: During entry, TACAN 3 operated in the search mode, but failed to lock up on the selected ground station. KSC (Kennedy Space Center) postflight tests revealed that TACAN 3 exhibited low receiver sensitivity.

CONCLUSION: The low receiver sensitivity of TACAN 3 was the reason for the observed anomaly. CORRECTIVE_ACTION: The unit will be removed and replaced. Failure analysis will be tracked on CAR 20F002. CAR ANALYSIS: The vendor found a defective 5 volt power supply during cold temperature operation. Further analysis disclosed a defective transistor collector lead at the die surface. Failure history of the device leads to the conclusion that this failure is an isolated case. No corrective action will be taken. [not included in original problem report] EFFECTS_ON_SUBSEQUENT_MISSIONS: NONE

Tracking No	Time	Classification		Documentation		Subsystem
MER - 0	**MET:**	Problem	**FIAR**	**IFA** STS-51C-V-10		STR
	GMT:		**SPR**	**UA**		**Manager:**
			IPR	**PR**		
						Engineer:

Title: Thermal Protection System (TPS) Had A Long Gouge Under The Left Wing. ()

Summary: DISCUSSION: Postflight inspection of the TPS (thermal protection system) system showed an intemittent gouge approximately 3/8 inch wide, and 1/4 inch deep and 5 feet long under the left wing outboard of the left main landing gear door at Y=267. The gouge is 17 inches outboard of the centerline of the left solid rocket booster. Close examination of the gouge indicated the damage occurred before or during ascent.

The post-recovery inspection of the left-hand solid rocket booster showed no missing hardware from the areas above the Orbiter damage and the launch film review showed no particles of sufficient mass to inflict the damage during launch. CONCLUSION: The cause of the TPS gouge is unknown. The damage will be repaired with normal tile repair procedures. CORRECTIVE_ACTION: Normal tile repair procedures will be used to repair the gouged area. EFFECTS_ON_SUBSEQUENT_MISSIONS: NONE

Tracking No	Time	Classification	Documentation		Subsystem
MER - 0	MET:	Problem	FIAR	IFA STS-51C-V-11	C&T
	GMT:		SPR 20F005	UA	Manager:
			IPR Comm A0010	PR Comm A0010	
					Engineer:

Title: Erratic Radar Altimeter 2 Operation At High Altitude. (ORB)

Summary: DISCUSSION: During the STS 51-C descent phase, RA (Radar Altimeter) 2 did not lock on the ground until the vehicle reached an altitude of 2300 feet. Normally, groundlock occurs at about 5000 feet. Between 2300 and 1400 feet, ground-lock was intermittent. From 1400 feet through landing, ground-lock was solid and the difference in the RA1 and RA2 altitude readings was within acceptable limits. Postflight troubleshooting indicated that the transmission lines were within specifications.

RA2 (S/N 12) was returned to the vendor for testing and no problem was found. RA1 (S/N 13) was moved to slot 2 and the spare unit (S/N 11) was flown in slot 1 for STS 51-D. During the STS 51-D descent phase, RA2 locked on the ground at 4983 feet, broke lock at 66 feet and then locked on the ground again at 23 feet. The receive antenna was removed and replaced prior to STS 51-G. During the descent phase of STS 51-G, RA2 did not lock on the ground until an altitude of 2165 feet was reached. Ground lock was broken at 1650 feet. Ground acquisition was regained at 1329 feet, but lock was again broken at 66 feet. Ground-lock was not regained thereafter. The data from this latter case and that of STS 51-C indicate that the problem is in the receive transmission lines, transmit transmission lines, or in the transmit antenna. The problem is most likely within the transmission lines since they are multi-sectional, semi-rigid types that may not exhibit a problem except during the dynamic conditions of entry and landing. To troubleshoot and/or replace the suspect hardware requires the removal of the forward RCS (Reaction Control System) and this will be done at the earliest opportunity. CONCLUSION: The most probable cause of the RA2 late and intermittent ground-lock conditions is a problem in the RA2-to-antenna transmission lines. CORRECTIVE_ACTION: Investigation of the transmission lines and transmit antenna will be continued when the forward RCS is removed. The results of this activity will be tracked via KSC PR Comm A0010 and CAR 20F005. EFFECTS_ON_SUBSEQUENT_MISSIONS: RA2 will continue to experience the erratic gorund-lock condition on OV-103 until the transmission lines and/or the transmit antenna is removed and replaced. CAR ANALYSIS: Vendor was unable to duplicate flight failure. Based on other Radar Altimeter failures in this vehicle position, the vehicle was examined and the antenna was determined to have a high VSWR. [not included in original problem report]

Tracking No	Time	Classification	Documentation		Subsystem
MER - 0	MET:	Problem	FIAR	IFA STS-51C-V-12	OMS
	GMT:		SPR 20F006	UA	Manager:
			IPR	PR	

Engineer:

Title: Right Orbital Maneuvering System Gaging System Failed. (ORB)

Summary: DISCUSSION: About 15 minutes before landing, all four of the right OMS (orbital maneuvering system) gage outputs went to zero simultaneously. This condition did not affect subsequent vehicle operations.

Postflight troubleshooting revealed blown fuses in the Orbiter power circuit to the totalizer. A subsequent bench check revealed an internal electrical short within the totalizer input power circuitry. The replacement unit functioned properly when installed in the vehicle. The failed totalizer has been returned to the vendor for failure analysis. CONCLUSION: The cause for the right OMS gaging failure was an internal electrical short within the totalizer input power circuitry. CORRECTIVE_ACTION: The failed totalizer has been returned to the vendor for failure analysis. The results of this activity will be tracked via CAR 20F006. CAR ANALYSIS: A loose piece of wire in the totalizer caused the problem. The manufacturer has instituted better manufacturing and inspection procedures. Close this CAR. [not included in original problem report] EFFECTS_ON_SUBSEQUENT_MISSIONS: NONE

Tracking No	Time	Classification	Documentation		Subsystem
MER - 0	**MET:**	Problem	**FIAR**	**IFA** STS-51C-V-13	RCS
	GMT:		**SPR** AC9013	**UA**	**Manager:**
			IPR	**PR**	

Engineer:

Title: Forward Reaction Control Subsystem Dilemma Fault Message Occurred During Deorbit Phase. (ORB)

Summary: DISCUSSION: During the deorbit phase following the FRCS (forward reaction control subsystem) dump, a FRCS dilemma occurred as the manifolds were being closed. There was a known preflight anomaly associated with slow operation of the FRCS manifold 4 oxidizer valve. Postflight data review showed that the oxidizer valve was 1 second slower than the fuel valve in closing, thus resulting in the fault message.

A slow actuating oxidizer valve in the aft RCS was removed preflight and returned to the vendor for failure analysis. Inspection revealed oxidizer contamination in the valve actuator that was probably caused by a faulty reworked weld in the valve bellows. Three valves have experienced slow actuator operation and one of these has completed failure analysis, which indicated a bellows weld failure due to rework. The three valves used bellows from 2 different lots. The system location of all valves of this type in the Orbiter has been identified and the result of the failure of any one of these valves to open and close has been reviewed. In each case, multiple failures would have to occur to create a significant mission impact. CONCLUSION: The fault message was caused by slow operation of the FRCS manifold 4 oxidizer valve, and the valve has been replaced. In the unlikely event a valve of this type should fail to operate on a future flight, multiple failures would have to occur to cause a significant mission impact. CORRECTIVE_ACTION: The manifold valve has been removed and replaced. Failure analysis will be tracked on CAR AC9013. Valve bellows welding rework operations have been discontinued. CAR ANALYSIS: CAR remains open at this date (10-28-86). [not included in original problem report]

EFFECTS_ON_SUBSEQUENT_MISSIONS: NONE

Tracking No	Time	Classification	Documentation		Subsystem
MER - 0	MET:	Problem	FIAR	IFA STS-51C-V-14	C&T
	GMT:		SPR	UA	Manager:
			IPR	PR	
					Engineer:

Title: AC Photo Floodlight Failed. (GFE)

Summary: DISCUSSION: The crew reported during the technical debriefing that AC photo floodlight had failed. Postflight troubleshooting at JSC found a blown fuse internal to the floodlight. The fuse was replaced and the light operated as designed. A blown fuse was also found in one of the two photo floodlights flown on STS 41-D. See problem STS-41D-19.

A new generation flourescent floodlight with two flourescent tubes and an easy-to-replace fuse will be flown on STS 51-E and subsequent flights. The new flourescent tubes are balanced for a truer daylight color. CONCLUSION: The failure of the photo floodlight was caused by a blown fuse. The most probable cause for the blown fuse was a weak, or underrated fuse. CORRECTIVE_ACTION: A new generation fluorescent floodlight with two tubes and an easy-to-replace fuse will be flown on STS 51-E and subsequent flights. EFFECTS_ON_SUBSEQUENT_MISSIONS: NONE

Tracking No	Time	Classification	Documentation		Subsystem
MER - 0	MET:	Problem	FIAR	IFA STS-51C-V-15	D&C
	GMT:		SPR 14F024	UA	Manager:
			IPR	PR	
					Engineer:

Title: Forward Digital Autopilot Panel C3 Rotational Pulse Pitch Push Button Indicator Light Failed. (ORB)

Summary: DISCUSSION: The crew reported during a postflight debriefing that the forward DAP (digital autopilot) panel C3 rotational pulse pitch PBI (push button indicator) light had failed. However, the DAP mode continued to work properly when selected. During the first flight of OV-103, this same DAP light operated intermittently. After postflight troubleshooting, the switch/light assembly was removed and replaced. However, failure analysis at the vendor showed no evidence of failure in the switch/light assembly. See problem STS-41D-29.

Postflight troubleshooting after STS 51-C isolated an intermittent condition in the light control circuit of the annunciator control assembly, ACA 1. This ACA will be removed and replaced with an ACA from OV-102. CONCLUSION: The failure of the forward DAP panel C3 pitch PBI light was due to an intermittent in the light control circuit of ACA 1. CORRECTIVE_ACTION: ACA 1 will be removed and replaced. Failure analysis will be tracked on CAR 14F024. CAR ANALYSIS: Flight data analysis indicates that the lamp was responding to valid data inputs. Failure analysis of lamp and switch failed to reveal an anomaly which might have caused the problem. [not included in original problem report] EFFECTS_ON_SUBSEQUENT_MISSIONS: NONE